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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,165	02/14/2002	Paul B. Hays	MAC-10102/29	8652

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EXAMINER

DOUGHERTY, THOMAS M

ART UNIT PAPER NUMBER

2834

DATE MAILED: 06/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/076,165

Applicant(s)

HAYS ET AL.

Examiner

Thomas M. Dougherty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 lists the "plurality of components" however it does not provide for any positioning or connection of these components with the other structure cited. Thus a routineer in the art has no definite, explicit understanding of how such components are provided within the structure. In claim 4, there is no proper antecedent basis for recitation of "the second member". For proper antecedent basis, the dependence of claim 4 would have to be changed from claim 1 to claim 3.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2, as best understood are rejected under 35 U.S.C. 102(b) as being anticipated by Lawless et al. (US 5,222,713). Lawless shows (fig. 12A) an improved piezoelectric (PZT, see col. 2, ll. 35-39) force motor, comprising: a housing (42) having

opposing ends; a PZT element (22) supported relative the housing operative to expand and contract the ends of the housing through application of an electrical signal; and a plurality of components (34, 42) exhibiting both positive and negative coefficients of thermal expansion which cooperate to cancel one another (col. 12, ll. 36-39) so as to reduce the overall temperature expansion of the motor. The PZT element (22) is a stacked structure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawless et al. (US 5,222,713) in view of Tsuruga (JP 2-197180).

Given the invention of Lawless et al. as noted above, he doesn't explicitly note that his components include a first member which expands in one direction; and a second member which expands in the opposite direction.

Tsuruga shows (fig. 1) an improved piezoelectric force motor, comprising: and a plurality of components (3, 4) exhibiting both positive and negative coefficients of thermal expansion which cooperate to cancel one another (see constitution) so as to reduce the overall temperature expansion of the motor. The piezoelectric element is a stacked structure.

He doesn't show a housing having opposing ends; it is unknown whether his piezoelectric element is PZT, and as there is no housing, his piezoelectric element cannot thus be supported relative the housing operative to expand and contract the ends of the housing through application of an electrical signal.

It would have been obvious to one having ordinary skill in the art to use a housing, and also to use PZT for the piezoelectric element in the device of Tsuruga, such as is taught by Lawless et al., at the time the Tsuruga invention was made in order to provide for protection of the Tsuruga device with the housing and in order to provide the Tsuruga structure with a superstructure, that being the housing, so that it can be used to do useful work in a desired environment. Use of PZT would have further been obvious to one having ordinary skill in the art since this is a well-known material with predictable operation. Finally, regarding use of PZT, it has been held within the general skill of a worker in the art to select a known material on the basis of its suitability for intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Allowable Subject Matter

Claim 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show a cup-shaped component which is a second member

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employed to reduce the overall temperature expansion coefficient of a piezoelectric motor and which expands in a direction opposite to a first member.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art cited shows attempts at cancellation of unintentional expansion due to temperature in piezoelectric devices.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

tmd

tmd

June 24, 2002

Thomas M. Dougherty
THOMAS M. DOUGHERTY
PRIMARY EXAMINER
GROUP 2100